

# Regenerable Biocidal Nanocomposite Through Green Chemistry Process

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### **Problem Statement**

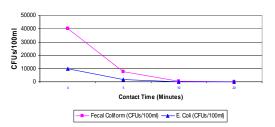
Washington, DC

- -Biocidal halamine polymer currently on the market is made with hazardous materials (e.g., volatile organics, cyanide)
- -Process of production requires high temperature and pressure
- -Very expensive, at \$250/kg
- -Difficult to bring to market

### **Technology Description**

- -Biocidal polymer based on nanoalumina polymer composite in a simple two step process
- -No hazardous materials
- -Reaction carried out in water and at ambient conditions
- -Inactivation of E. Coli in wastewater, achieving 99.999% reduction in 20 minutes
- -Can be regenerated
- Successfully fixed onto cotton to be used as antibacterial fabric

## Fecal Coliform and E Coli Inactivation in Wastewater Using Nanoalumina Composite



### **Expected Results**

- -Low cost biocidal polymer composite
- -Filtration media to treat wastewater
- -Antibacterial cotton and cotton blend fabric in medical application

### **Potential Environmental Benefits**

- -Significant reduction or elimination of volatile organics, solvents, and hazardous materials
- -Reaction is carried out at ambient conditions and therefore saves energy